

**TABLES OF PHYSICAL AND ELECTRICAL
PROPERTIES OF CONDUCTORS USED
ON OVERHEAD LINES**

PUBLICATION P-50-431 ALUMINIUM CONDUCTORS
PUBLICATION P-51-432 COPPER CONDUCTORS
PUBLICATION P-52-469 COPPER COVERED STEEL CONDUCTORS

MAY 1970



INSULATED POWER CABLE ENGINEERS ASSOCIATION

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FOREWORD

This Project consolidates material which was developed in three separate Projects over several years.

Together they cover the Physical and Electrical Properties of Conductors Used on Overhead Lines.

Because the bases for calculation apply to several tables equally, all notes and applicable formulae are consolidated in a section at the end of the tables, P. 30, et. seq.

TABLE I

PHYSICAL CHARACTERISTICS OF BARE AGSR CONDUCTORS

Code Word	Size of Conductor		Total	Stranding		Outside Diameter Complete Cable In.	Core In.	WEIGHT PER 1000 FEET			ULTIMATE STRENGTH - POUNDS		
	Circular Mils or Alumi-	Gross Section Sq. Inches		Aluminum	Steel			Total lbs	Aluminum lbs	Steel lbs	Type Zinc Coating or Core		
											Standard Weight	C	
Turkey	6	0.0206	0.0240	6 x .0661	1 x .0661	0.198	0.0661	36.1	24.5	11.6	1,170	1,170	1,150
Thrush	5	.0260	.0303	6 x .0743	1 x .0743	.223	.0743	55.5	30.9	14.6	1,460	1,460	1,440
Swan	4	.0328	.0383	6 x .0834	1 x .0834	.250	.0834	67.4	39.0	18.4	1,830	1,830	1,800
Swamp	4	.0328	.0411	7 x .0772	1 x .1029	.257	.1029	72.4	39.0	28.0	2,288	2,245	2,205
Swallow	3	.0413	.0482	6 x .0937	1 x .0937	.281	.0937	91.3	49.2	23.3	2,250	2,220	2,180
Sparrow	2	.0521	.0608	6 x .1052	1 x .1052	.316	.1052	106.7	62.0	29.3	2,790	2,745	2,705
Sparrow	2	.0521	.0653	7 x .0974	1 x .1299	.325	.1299	115.2	78.2	37.0	3,480	3,385	3,255
Robin	1	.0657	.0767	6 x .1182	1 x .1182	.355	.1182	145.2	98.6	46.6	4,280	3,430	3,380
Raven	1/0	.0829	.0967	6 x .1327	1 x .1327	.398	.1327	183.1	124.3	58.8	5,345	4,410	4,000
Quail	2/0	.1045	.1219	6 x .1490	1 x .1490	.447	.1490	230.8	156.8	74.0	6,675	4,910	4,820
Pigeon	3/0	.1318	.1538	6 x .1672	1 x .1672	.502	.1672	291.1	197.7	93.4	8,420	7,730	6,020
Partridge	4/0	.1662	.1939	6 x .1878	1 x .1878	.563	.1878	367	250.5	115.6	11,250	6,720	6,600
Ostrich	266, 800	.2095	.2211	18 x .1217	1 x .1217	.609	.1217	413	283.0	129.8	12,650	12,650	12,450
Merlin	266, 800	.2095	.2436	26 x .1013	7 x .0788	.642	.2356	463	317.3	145.8	14,050	14,050	13,830
Linnet	300, 000	.2356	.2740	26 x .1074	7 x .0835	.680	.2505	527	318.1	209	17,040	16,740	16,430
Chickadee	336, 400	.2642	.2789	18 x .1367	1 x .1367	.684	.1367	547	373.2	58.5	10,040	9,605	9,520
Ibis	397, 500	.3122	.3630	26 x .1236	7 x .0961	.783	.1186	623	375.0	171.9	16,190	15,930	15,680
Lark	397, 500	.3122	.3850	30 x .1151	7 x .1151	.806	.3453	717	375.9	246.9	19,980	19,600	19,240
Pelican	477, 000	.3746	.3954	18 x .1628	1 x .1628	.814	.1628	819	447.8	70.2	11,870	11,350	11,245
Flicker	477, 000	.3746	.4232	24 x .1410	7 x .0940	.846	.2820	833	450.0	164.5	17,200	16,950	16,700
Hawk	477, 000	.3746	.4356	26 x .1355	7 x .1054	.858	.3162	872	450.0	206.8	19,430	19,100	18,820
Hen	477, 000	.3746	.4620	30 x .1261	7 x .1261	.883	.3783	919	451.1	296.3	23,300	22,500	21,600
Osprey	556, 500	.4371	.4614	18 x .1758	1 x .1758	.879	.1758	1044	522.4	81.9	13,850	13,240	13,120
Parakeet	556, 500	.4371	.4938	24 x .1523	7 x .1015	.914	.3045	1044	525.0	191.8	19,850	19,550	19,270
Dove	556, 500	.4371	.5083	26 x .1463	7 x .1138	.927	.3411	1044	525.0	241.1	22,400	22,100	21,700
Eagle	556, 500	.4371	.5391	30 x .1362	7 x .1362	.953	.409	1044	526.3	345.7	27,200	26,200	25,200
Peacock	605, 000	.4752	.5368	24 x .1588	7 x .1059	.953	.318	1044	570.7	208.8	21,500	21,250	20,950
Squab	605, 000	.4752	.5526	26 x .1525	7 x .1186	.966	.356	1044	570.7	261.9	23,100	23,800	23,400
Teal	605, 000	.4752	.5835	30 x .1420	19 x .0852	.994	.426	1044	572.1	367.6	30,000	30,000	29,500
Rock	636, 000	.4955	.5613	24 x .1628	7 x .1085	.977	.426	1044	600.0	219.2	22,600	22,300	22,000
Grosbeak	636, 000	.4955	.5809	26 x .1564	7 x .1216	.990	.465	1044	600.0	275.3	25,000	24,200	23,400

TABLE I (cont.)

PHYSICAL CHARACTERISTICS OF BARE ACSS CONDUCTORS

Code Word	Size of Conductors			Outside Diameter		WEIGHT PER 1000 FEET			ULTIMATE STRENGTH - POUNDS		
	Circular Mills or Avg	Square Inches	Total	Complete Cable In.	Steel Core In.	Aluminum	Steel	Total lbs	Aluminum lbs	Steel lbs	Type Zinc Coating or Core
											Standard Weight
											B
											C
Egret	636,000	0.4995	0.6134	30 x .1456	19 x .0874	1.019	0.437	988	601.4	386.8	31,500
Flamingo	666,000	.5235	.5914	24 x .1667	7 x .1111	1.000	.333	859	628.8	229.8	23,000
Gow	715,500	.5620	.6348	54 x .1151	7 x .1151	1.036	.345	921	675.0	246.4	25,900
Starling	715,500	.5620	.6535	26 x .1659	7 x .1290	1.051	.387	985	675.0	309.8	26,300
Redwing	715,500	.5620	.6901	30 x .1544	19 x .0926	1.081	.463	1111	676.6	434.2	34,000
Drake	795,000	.6244	.7261	26 x .1749	7 x .1366	1.108	.408	1094	750.0	344.3	30,200
Mallard	795,000	.6244	.7668	30 x .1628	19 x .0977	1.110	.489	1235	751.8	483.3	37,000
Tern	795,000	.6244	.6676	45 x .1329	7 x .0886	1.063	.266	896	750.0	22,900	22,700
Condor	795,000	.6244	.7053	54 x .1214	7 x .1214	1.093	.364	1024	750.0	274.1	27,700
Crane	874,500	.6868	.7759	54 x .1273	7 x .1273	1.146	.382	1126	825.0	301.4	30,500
Canary	900,000	.7069	.7985	54 x .1291	7 x .1291	1.162	.387	1159	849.0	310.0	30,500
Rail	954,000	.7493	.8011	45 x .1456	7 x .0971	1.165	.291	1075	900.0	175.0	26,400
Cardinal	954,000	.7493	.8464	54 x .1329	7 x .1329	1.196	.399	1229	900.0	328.5	32,300
Ortolan	1,033,500	.8117	.8678	45 x .1516	7 x .1011	1.213	.303	1165	975.0	190.0	28,900
Curlew	1,033,500	.8117	.9169	54 x .1384	7 x .1384	1.246	.415	1331	975.0	356.3	35,000
Bluejay	1,113,000	.8741	.9346	45 x .1573	7 x .1049	1.259	.315	1255	1050	205	30,900
Finch	1,113,000	.8741	.9819	54 x .1436	19 x .0862	1.293	.431	1431	1055	376	40,200
Bunting	1,192,500	.9367	1.001	45 x .1628	7 x .1085	1.302	.326	1344	1125	219	32,800
Grackle	1,192,500	.9366	1.055	54 x .1486	19 x .0892	1.338	.446	1533	1130	403	43,000
Bittern	1,272,000	.9990	1.068	45 x .1681	7 x .1121	1.345	.336	1434	1200	234	35,400
Pheasant	1,272,000	.9990	1.126	54 x .1535	19 x .0921	1.382	.461	1635	1205.8	429.5	44,800
Dipper	1,351,500	1.062	1.135	45 x .1733	7 x .1151	1.386	.347	1523	1275	248	37,600
Martin	1,351,500	1.0625	1.196	54 x .1582	19 x .0949	1.424	.475	1737	1281.2	456	47,000
Bobolink	1,431,000	1.124	1.202	45 x .1783	7 x .1189	1.427	.357	1613	1350	263	39,800
Plover	1,431,000	1.124	1.266	54 x .1628	19 x .0977	1.465	.489	1840	1356.5	483.3	50,400
Nuthatch	1,510,500	1.186	1.268	45 x .1832	7 x .1221	1.466	.366	1702	1425	277	40,700
Parrot	1,510,500	1.186	1.337	54 x .1673	19 x .1004	1.506	.502	1942	1432	510	53,200
Lapwing	1,590,000	1.249	1.335	45 x .1878	7 x .1252	1.502	.376	1792	1500	292	51,800
Falcon	1,590,000	1.249	1.407	54 x .1716	19 x .1030	1.545	.515	2044	1507	537	55,000
Chukar	1,780,000	1.398	1.512	84 x .1456	19 x .0874	1.602	.437	2074	1687	387	53,600
Grouse	80,000	.0628	.0817	8 x .1000	1 x .1670	.367	.1670	149.0	75.1	73.9	5,200
Petrel	101,800	.0800	.1266	12 x .0921	7 x .0921	.461	.2763	254.1	96.1	158.1	9,860
Minorca	110,800	.0878	.1378	12 x .0961	7 x .0961	.481	.2883	276.6	104.5	172.1	10,730
Leghorn	134,600	.1057	.1674	12 x .1059	7 x .1059	.530	.3177	336.0	127.0	209.0	12,620
Quinea	159,000	.1249	.1977	12 x .1151	7 x .1151	.576	.3453	396.8	150.0	246.8	14,850
Dottrel	176,900	.1389	.2200	12 x .1214	7 x .1214	.607	.3642	441.4	166.9	274.5	15,640
Dorking	190,800	.1499	.2373	12 x .1261	7 x .1261	.631	.3783	476.3	180.0	296.3	16,800
Cochin	211,300	.1660	.2628	12 x .1327	7 x .1327	.663	.3981	527.5	199.3	328.2	17,700
Brahma	203,200	.1596	.3020	16 x .1127	19 x .0977	.714	.4885	676.8	191.7	485.1	18,700
											26,800

TABLE II

PHYSICAL CHARACTERISTICS OF BARE ALL-ALUMINUM CONDUCTORS

Code Word	Conductor Size Mils or Avg	Stranding Class	Total Number of Wires	Wire Diameter Inch	Cable Diameter Inch	Gross Sectional Area Square Inch	Weight per 1000 Ft. lbs	Ultimate Strength Hard Drawn lbs
Peachbell	6	A	7	0.0612	0.184	0.0206	24.6	528
Rose	4	A	7	.0772	.232	.0328	39.2	826
Lily	3	A	7	.0867	.260	.0413	49.4	1,023
Iris	2	AA	7	.0974	.292	.0521	62.3	1,266
Pansy	1	AA	7	.1093	.328	.0657	78.6	1,538
Poppy	1/0	AA	7	.1228	.368	.0829	99.1	1,865
Aster	2/0	AA	7	.1379	.414	.1045	124.9	2,350
Phlox	3/0	AA	7	.1548	.464	.1318	157.5	2,845
Orlip	4/0	AA	7	.1739	.522	.1662	198.6	3,590
Daisy	266,800	AA	7	.1953	.566	.2095	250.5	4,525
Laurel	266,800	A	19	.1185	.593	.2095	250.5	4,810
Tulip	366,400	AA	19	.1331	.666	.2642	315.8	5,940
Canna	397,500	AA	19	.1447	.724	.3122	373.1	6,880
Cosmos	477,000	AA	19	.1585	.793	.3746	447.8	8,090
Syringa	477,000	A	37	.1135	.795	.3746	447.8	8,600
Dahlia	556,500	A	19	.1711	.856	.4371	522	9,440
Mistletoe	556,500	A & AA	37	.1226	.858	.4371	522	9,830
Orchid	636,000	AA	37	.1311	.918	.4995	597	11,240
Violet	715,500	AA	37	.1391	.974	.5620	672	12,640
Nasturtium	715,500	A	61	.1083	.975	.5620	672	13,150
Arbutus	795,000	AA	37	.1466	1.026	.6244	746	13,770
Lilac	795,000	A	61	.1142	1.028	.6244	746	14,330
Anemone	874,500	AA	37	.1538	1.077	.6868	821	14,830
Crocus	874,500	A	61	.1198	1.078	.6868	821	15,760
Magnolia	954,000	AA	37	.1606	1.124	.7493	896	16,180
Goldenrod	954,000	A	61	.1251	1.126	.7493	896	16,860
Bluebell	1,033,500	AA	37	.1672	1.170	.8117	970	17,530
Larkspur	1,033,500	A	61	.1302	1.172	.8117	970	18,260
Marigold	1,113,000	AA	61	.1351	1.216	.8741	1045	19,660
Harthorn	1,192,500	AA	61	.1398	1.258	.9366	1119	21,000
Narcissus	1,272,000	AA	61	.1444	1.300	.9990	1194	22,000
Columbine	1,351,500	AA	61	.1489	1.340	1.062	1269	23,400
Carnation	1,431,000	AA	61	.1532	1.379	1.124	1343	24,300
Gladiolus	1,510,500	AA	61	.1574	1.417	1.186	1418	25,600
Coreopsis	1,590,000	AA	61	.1615	1.454	1.249	1493	27,000
Dogwood	1,590,000	A	91	.1322	1.454	1.249	1493	28,100

TABLE III

ELECTRICAL CHARACTERISTICS - SINGLE LAYER ACSR

Code Word	Size Avg or Nom	STRANDING	RESISTANCE										INDUCTIVE REACTANCE				CAPACITIVE REACTANCE 1 ft Equivalent Spacing-60 cps megohms-miles
			DC (1) 20 C		AC-60 CYCLES (2)		CAPACITY(3)		1 ft. Equivalent Spacing		75 C		ohms/mile	ohms/mile	ohms/mile	ohms/mile	
			ohms/1000'	ohms/mile	ohms/mile	ohms/mile	Amperes	25 C	60 cps (4)	50 C	75 C						
Turkey	6	6	1	0.6577	3.459	3.940	4.320	104	0.636	0.728	0.774	0.1423					
Swan	4	6	1	.4134	2.176	2.518	2.763	139	.604	.691	.723	.1354					
Swanate	4	7	1	.4134	2.154	2.523	2.797	139	.608	.710	.746	.1346					
Sparrow	2	6	1	.2601	1.372	1.628	1.783	183	.578	.642	.673	.1284					
Sparate	2	7	1	.2601	1.357	1.635	1.799	184	.579	.661	.683	.1276					
Robin	1	6	1	.2062	1.089	1.305	1.433	210	.564	.629	.645	.1250					
Raven	1/0	6	1	.1634	0.864	1.052	1.153	240	.550	.607	.621	.1216					
Quail	2/0	6	1	.1297	.686	.853	.934	275	.536	.590	.601	.1182					
Pigeon	3/0	6	1	.1028	.545	.690	.757	316	.520	.572	.579	.1147					
Penguin	4/0	6	1	.08155	.434	.569	.617	360	.508	.555	.557	.1113					
Grouse	80.0	8	1	.2168	1.120	1.404	1.549	204	.570	.666	.677	.1240					
Petrel	101.8	12	7	.1712	.851	1.084	1.261	240	.540	.622	.674	.1172					
Minorca	110.8	12	7	.1573	.801	1.024	1.194	249	.535	.612	.664	.1160					
Leghorn	134.6	12	7	.1295	.646	.845	.995	285	.525	.598	.641	.1131					
Guinea	159.0	12	7	.1096	.547	.731	.865	307	.516	.584	.624	.1106					
Dotterel	176.9	12	7	.09851	.493	.667	.791	324	.509	.574	.610	.1091					
Dorking	190.8	12	7	.09134	.457	.625	.743	338	.504	.568	.601	.1079					
Cochin	211.3	12	7	.08248	.413	.575	.684	363	.498	.561	.590	.1065					
Brahma	203.2	16	19	.08576	.412	.553	.691	357	.489	.551	.587	.1043					

ELECTRICAL CHARACTERISTICS - MULTILAYER ACSR

Table IV

Code Word	Size Mcm	Stranding Al./St.	Number of Aluminum Layers	RESISTANCE				AMPAICITY(3) Amperes	GMR Feet	INDUCTIVE REACTANCE 1 FT. EQUIVALENT SPACING-60 CPS(4) ohms/mile	CAPACITIVE REACTANCE 1 FT. EQUIVALENT SPACING-60 CPS(4) megohm-miles
				AC - 60 CPS (2)							
				DC(1) 20 C ohms/ 1000'	25 C ohms/ Mile	50 C ohms/ Mile	75 C ohms/ Mile				
Waxwing	266.8	18/1	2	0.06500	0.348	0.382	0.416	448	0.0198	0.476	0.1090
Partridge	266.8	26/7	2	0.06532	.344	.378	.412	457	.0217	.465	.1074
Ostrich	300.0	26/7	2	.05809	.306	.336	.366	492	.0229	.458	.1057
Merlin	336.4	18/1	2	.05155	.276	.304	.331	518	.0222	.462	.1055
Linnet	336.4	26/7	2	.05181	.273	.300	.327	528	.0243	.451	.1040
Oriole	336.4	30/7	2	.05193	.271	.297	.324	534	.0255	.445	.1032
Chickadee	397.5	18/1	2	.04363	.234	.257	.280	575	.0241	.452	.1031
Ibis	397.5	26/7	2	.04384	.231	.254	.277	586	.0264	.441	.1015
Lark	397.5	30/7	2	.04395	.229	.252	.275	593	.0277	.435	.1007
Pelican	477.0	18/1	2	.03636	.196	.215	.234	644	.0264	.441	.1004
Flicker	477.0	24/7	2	.03654	.194	.213	.232	654	.0284	.432	.0992
Hawk	477.0	26/7	2	.03654	.193	.212	.231	658	.0289	.430	.0988
Hen	477.0	30/7	2	.03662	.191	.210	.229	665	.0304	.424	.0980
Osprey	556.5	18/1	2	.03116	.168	.185	.202	708	.0284	.432	.0981
Parakeet	556.5	24/7	2	.03132	.167	.183	.200	718	.0306	.423	.0969
Dove	556.5	26/7	2	.03132	.166	.182	.198	725	.0314	.420	.0965
Eagle	556.5	30/7	2	.03139	.164	.180	.197	732	.0327	.415	.0957
Peacock	605.0	24/7	2	.02880	.153	.169	.184	757	.0319	.418	.0957
Squab	605.0	26/7	2	.02880	.153	.168	.183	762	.0327	.415	.0953
Teal	605.0	30/19	2	.02887	.151	.166	.181	772	.0341	.410	.0944
Rook	636.0	24/7	2	.02740	.146	.161	.175	782	.0327	.415	.0950
Grosbeak	636.0	26/7	2	.02740	.145	.160	.174	787	.0335	.412	.0946
Egret	636.0	30/19	2	.02747	.144	.158	.172	797	.0352	.406	.0937
Flamingo	666.6	24/7	2	.02614	.139	.153	.167	805	.0335	.412	.0943
Crow	715.5	54/7	3	.02436	.130	.146	.162	825	.0349	.407	.0932
Starling	715.5	26/7	2	.02436	.130	.142	.155	847	.0355	.405	.0948
Redwind	715.5	30/19	2	.02442	.128	.141	.153	858	.0373	.399	.0920
Drake	795.0	26/7	2	.02192	.117	.128	.140	903	.0373	.399	.0912
Mallard	795.0	30/19	2	.02197	.116	.128	.139	913	.0392	.393	.0904
Tern	795.0	45/7	3	.02192	.119	.132	.146	875	.0352	.406	.0925
Cendor	795.0	54/7	3	.02192	.117	.131	.146	881	.0370	.400	.0916
Crane	874.5	54/7	3	.01993	.107	.120	.133	935	.0386	.395	.0902
Canary	900.0	54/7	3	.01936	.104	.117	.130	926	.0392	.393	.0898
Rail	954.0	45/7	3	.01827	.100	.111	.123	953	.0386	.395	.0897
Cardinal	954.0	54/7	3	.01827	.098	.110	.123	960	.0402	.390	.0890

TABLE IV (Cont.)

ELECTRICAL CHARACTERISTICS - MULTILAYER ACSR

Code Word	Size Mcm	Stranding Al./St.	Number of Aluminum Layers	RESISTANCE						AMPACITY(3) amperes	GMR feet	INDUCTIVE REACTANCE 1 FT. EQUIVALENT SPACING-60CPS(4) ohms/mile	CAPACITIVE REACTANCE 1 FT. EQUIVALENT SPACING-60CPS(4) megohm-miles
				AC - 60 CPS (2)									
				DC(1) 20 C ohms/ 1000'	25 C ohms/ Mile	50 C ohms/ Mile	75 C ohms/ Mile						
Ortolan	1033.5	45/7	3	0.01686	0.092	0.103	0.113	1005	0.0402	0.390	0.0885		
Curlew	1033.5	54/7	3	.01686	.091	.102	.114	1010	.0420	.385	.0877		
Bluejay	1113.0	45/7	3	.01566	.086	.096	.106	1051	.0415	.386	.0874		
Finch	1113.0	54/19	3	.01573	.085	.095	.106	1060	.0436	.380	.0866		
Bunting	1192.5	45/7	3	.01461	.081	.089	.099	1099	.0429	.382	.0864		
Grackle	1192.5	54/19	3	.01469	.080	.089	.099	1108	.0451	.376	.0856		
Bittern	1272.0	45/7	3	.01370	.076	.084	.093	1145	.0444	.378	.0855		
Pheasant	1272.0	54/19	3	.01377	.075	.085	.094	1148	.0466	.372	.0847		
Dipper	1351.5	45/7	3	.01290	.072	.080	.088	1188	.0459	.374	.0846		
Martin	1351.5	54/19	3	.01296	.071	.079	.088	1198	.0482	.368	.0838		
Bobolink	1431.0	45/7	3	.01218	.068	.076	.084	1227	.0470	.371	.0837		
Flower	1431.0	54/19	3	.01224	.067	.075	.084	1237	.0494	.365	.0829		
Nuthatch	1510.5	45/7	3	.01154	.065	.072	.080	1268	.0486	.367	.0829		
Parrot	1510.5	54/19	3	.01159	.064	.072	.080	1278	.0506	.362	.0821		
Lapwing	1590.0	45/7	3	.01096	.061	.069	.076	1310	.0498	.364	.0822		
Falcon	1590.0	54/19	3	.01101	.061	.068	.077	1313	.0523	.358	.0814		
Chukar	1780.0	84/19	4	.00984	.056	.061	.066	1434	.0536	.355	.0803		

TABLE V
ELECTRICAL CHARACTERISTICS - BARE ALL-ALUMINUM CONDUCTORS

Code Word	Size Avg or Mcm	Stranding No. Wires	RESISTANCE						CAPACITY (3) amperes	GMR feet	Inductive Reactance 1 Ft. Equivalent Spacing - 60 CPS ohms/mile	Capacitive Reactance 1 Ft. Equivalent Spacing - 60 CPS megohms-mile
			DC (1) 20 C ohms/ 1000'	AC - 60 CPS (2)								
				25 C ohms/ Mile	50 C ohms/ Mile	75 C ohms/ Mile						
Peachbell	6	7	0.6609	3.561	3.912	4.264		103	.00556	0.630	0.1445	
Rose	4	7	.4155	2.239	2.460	2.681		138	.00700	.602	.1376	
Lily	3	7	.3296	1.776	1.951	2.127		159	.00786	.588	.1342	
Iris	2	7	.2613	1.408	1.547	1.687		185	.00882	.574	.1308	
Pansy	1	7	.2072	1.117	1.227	1.337		214	.00990	.560	.1273	
Poppy	1/0	7	.1642	0.885	0.973	1.060		247	.0111	.546	.1239	
Aster	2/0	7	.1303	.689	.772	.841		286	.0125	.532	.1204	
Phlox	3/0	7	.1033	.558	.613	.668		330	.0140	.518	.1171	
Oxlip	4/0	7	.08196	.442	.486	.529		382	.0158	.503	.1136	
Daisy	266.8	7	.06500	.351	.386	.420		442	.0177	.489	.1101	
Laurel	266.8	19	.06500	.351	.386	.420		444	.0187	.483	.1098	
Tulip	336.4	19	.05155	.279	.306	.334		513	.0210	.469	.1063	
Garna	397.5	19	.04363	.237	.259	.283		570	.0230	.458	.1038	
Cosmos	477.0	19	.03636	.197	.217	.236		639	.0249	.448	.1011	
Syringa	477.0	37	.03636	.197	.217	.236		640	.0253	.446	.1011	
Dahlia	556.5	19	.03116	.170	.186	.203		703	.0271	.438	.0989	
Mistletoe	556.5	37	.03116	.170	.186	.203		704	.0275	.436	.0988	
Orchid	636.0	37	.02727	.149	.164	.178		765	.0294	.428	.0968	
Violet	715.5	37	.02424	.133	.146	.158		823	.0311	.421	.0951	
Nasturtium	715.5	61	.02424	.133	.146	.158		824	.0314	.420	.0950	
Arbutus	795.0	37	.02181	.120	.131	.143		874	.0327	.415	.0935	
Lilac	795.0	61	.02181	.120	.131	.143		878	.0330	.414	.0935	
Anemone	874.5	37	.01983	.110	.120	.130		932	.0344	.409	.0921	
Crocus	874.5	61	.01983	.110	.120	.130		932	.0346	.408	.0920	
Magnolia	954.0	37	.01818	.101	.110	.120		982	.0358	.404	.0908	
Goldenrod	954.0	61	.01818	.1012	.1103	.1201		982	.0361	.403	.0907	
Bluebell	1033.5	37	.01678	.0938	.1024	.1111		1031	.0373	.399	.0896	
Larkspur	1033.5	61	.01678	.0938	.1024	.1111		1032	.0376	.398	.0896	
Marigold	1113.0	61	.01558	.0878	.0956	.1036		1079	.0392	.393	.0885	
Hawthorn	1192.5	61	.01454	.0824	.0896	.0971		1125	.0405	.389	.0875	
Narcissus	1272.0	61	.01363	.0775	.0844	.0913		1170	.0419	.385	.0865	
Columbine	1351.5	61	.01283	.0734	.0800	.0865		1212	.0429	.382	.0856	
Carnation	1431.0	61	.01212	.0699	.0759	.0821		1254	.0444	.378	.0847	
Gladiolus	1510.5	61	.01148	.0665	.0724	.0781		1295	.0445	.375	.0839	
Coreopsis	1590.0	61	.01091	.0637	.0691	.0746		1334	.0466	.372	.0832	
Dogwood	1590.0	91	.01091	.0637	.0691	.0746		1334	.0470	.371	.0832	